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Research Concerning Myxosporidia Parasitic on the Nervous Tissue of Yamame and Amago-I

(Morphology of Spores and Region Parasitized)

Myxosporidia spores parasitic on nervous tissue were discovered in the course of a survey of fish suffering from yamame and amago sleeping sickness (provisional appellation), and aspects such as the region parasitized and the morphology of the spores were examined. The data obtained are being used to determine the cause of the sleeping sickness.

Experimental

The fish tested were fish suffering from yamame and amago sleeping sickness, which occurred at two salmon farms in Hiroshima Prefecture. For the determination of the morphology of the spores, smears of the medulla and smears of a homogenate from the head (principally all tissues adjacent to the brain) of fresh fish were used. For the determination of the region parasitized, paraffin slices were prepared from Bouin's fixed samples, subjected to haematoxylin-eosine staining and observed.

Results

1. Region Parasitized by Spores

- Parasitism by spores in fish tested from both salmon farms A and B was observed only in the nervous tissue.
- In salmon farm A parasitism was observed in the medulla and the spinal nerves, and in salmon farm B large quantities of spores could be seen in the cranial nerves as well. Up to the present time, however, there has been no case in which the presence of spores in the brain has been confirmed at either salmon farm A or B.
- Apart from the nerves, tissues such as muscles, the liver, the kidneys and the alimentary canal were observed. The presence of spores could frequently be confirmed in specimen slices of the lateral muscle, but in each case this was limited to regions through which nervous tissue passes, and no spores were observed in muscle tissue.
- With regard to the state of parasitism by the spores, although the spores were found in one cluster, in almost no cases were they observed to be encysted, and their distribution was found to be rather scattered.

2. Morphology of Spores

The morphology varies somewhat between spores obtained from cranial nerves and those obtained from the medulla. As shown in the table below, morphologically the spores can be roughly classified according to whether they are circular or pear-shaped as viewed from the front.

	C 正面観	D 長さ	E 幅	F 厚さ	G 極胞長さ	H 同左直径	I 皮殻厚さ
A 脳神経由来	J 円形	10.5μ	10.0μ	7.3μ	6.0μ	2.8μ	1.0μ
B 脊髄由来	K 西洋梨形	10 μ	7.4μ	5.6μ	6.3μ	2.5μ	0.5μ

Key: A. Spores obtained from cranial nerves, B. Spores obtained from medulla, C. Frontal view, D. Length, E. Width, F. Thickness, G. Length of polar spores, H. Diameter of polar spores, I. Thickness of shell, J. Circular, K. Pear-shaped.

Applications and Problem Areas

A study was carried out concerning myxosporidia parasitic in nervous tissue, discovered in fish suffering from yamame and amago sleeping sickness, but this is the first time that these sporidia were discovered in Japan. It is predicted that this will result in many problems, and precautions are therefore necessary.

(person in charge: Murakami)